ACC.12
61st Annual Scientific Session & Expo
ACC-i2 with TCT innovation in intervention

E981
JACC March 27, 2012
Volume 59, Issue 13

Heart Failure

BIOFEEDBACK TRAINING IN PATIENTS WITH ADVANCED HEART FAILURE

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Monday, March 26, 2012, 11:00 a.m.-Noon

Session Title: Innovations in Heart Failure Therapy: Statins to Stem Cells
Abstract Category: 13. Heart Failure: Therapy
Presentation Number: 1215-158

Authors: *Dana L. Frank, Matthew Baumann, Michael Liebenstein, Lamees Khorshid, Gregory J. Bolwell, Elizabeth F. Grossman, Jerome Kiffer, Wai Hong Tang, James Young, Randall Starling, Michael G. McKee, Christine Moravec, Cleveland Clinic, Cleveland, OH, USA*

Background: Biofeedback (BF) is a self-regulation technique that teaches individuals to alter autonomic balance. In heart failure (HF), decreasing sympathetic nervous system (SNS) over-activation with a β-blocker, ACE inhibitor or LVAD, improves clinical status and reverses cellular and molecular alterations. We hypothesized that HF patients could use BF to regulate the SNS and produce biological remodeling.

Methods: 20 patients (12 inpatients & 8 outpatients, 17 males & 3 females, mean age 56 +/- 10, mean LVEF 23 +/- 15%, NYHA class III/ IV), all listed for cardiac transplant, were studied. BF training included respiratory and temperature feedback. At transplant, explanted hearts were taken to the lab, and the inotropic response of LV trabecular muscles to a single dose of isoproterenol was used as an index of SNS recovery.

Results: The average inotropic response of muscles in the BF group (32 muscles from 11 hearts) was compared to those from non-failing (NF; 20 muscles from 11 hearts), failing (F; 34 muscles from 20 hearts) and LVAD-supported failing human hearts (LVAD; 37 muscles from 17 hearts). Figure 1 illustrates percent change in developed tension. The BF group showed significant recovery relative to F ($p < 0.01$), and possibly greater recovery than LVAD.

Conclusions: These preliminary data suggest that BF is associated with positive remodeling of the myocardium in advanced HF patients, providing encouraging trends for the design of a randomized trial using BF as an adjunctive therapeutic intervention.